

At page 44, line 10, delete "used" and substitute therefor -- used as the --.

**In the Claims**

Please cancel claims 1-6 without prejudice.

Please add claims 7-37 as follows:

- 7. A substrate with a surface comprising a microarray of DNA sequences, wherein (i) the microarray has a density of about 400 or more discrete regions of DNA sequences per  $\text{cm}^2$  of substrate surface, (ii) the DNA sequences are isolated polynucleotides, (iii) the microarray comprises 400 or more regions, and (iv) each region in the microarray is free of cross-contamination with DNA sequences applied to the other regions in the microarray.--
- 8. The substrate of claim 7, wherein the density of discrete regions of DNA sequences is at least about  $10,000/\text{cm}^2$ . --
- 9. The substrate of claim 7, wherein the density of discrete regions of DNA sequences is at least about  $2500/\text{cm}^2$ . --
- 10. The substrate of any one of claims 7, 8 or 9, wherein the substrate is glass. --
- 11. The substrate of any one of claims 7, 8 or 9, wherein the substrate is non-porous. --
- 12. The substrate of any one of claims 7, 8 or 9, wherein the surface of the substrate is hydrophobic. --
- 13. The substrate of any one of claims 7, 8 or 9, wherein the surface of the substrate comprises one or more chemical moieties selected from the group consisting of silyl, hydroxyl, carboxyl, amine, aldehyde, and sulfhydryl. --
- 14. The substrate of any one of claims 7, 8 or 9, wherein the DNA sequences are

covalently bound to the surface of the substrate. --

-- 15. The substrate of any one of claims 7, 8 or 9, wherein the DNA sequences are non-covalently bound to the surface of the substrate. --

-- 16. The substrate of claim 15, wherein the DNA sequences are non-covalently bound to a polycationic polymer on the surface of the substrate. --

--17. The substrate of any one of claims 7, 8 or 9, wherein the DNA sequences are selected from the group of polynucleotides consisting of mRNA-derived sequences, genomic DNA sequences and fragments thereof.--

-- 18. The substrate of any one of claims 7, 8 or 9, wherein the microarray comprises 2,500 or more regions. --

-- 19. The substrate of any one of claims 7, 8, or 9, wherein the microarray comprises 10,000 or more regions. --

-- 20. The substrate of any one of claims 7, 8, or 9, wherein the DNA sequences are bound directly to the surface of the substrate. --

-- 21. A substrate with a surface comprising a microarray of DNA sequences, wherein the DNA sequences are polynucleotides, produced by a method comprising the steps of

(a) depositing a selected volume between about 0.002 nl and about 2 nl of a solution comprising a selected, isolated polynucleotide at a discrete region on the surface of the substrate, and

(b) repeating step (a) at other locations on the surface of the substrate until a microarray of 400 or more regions is formed, wherein the regions are at a density between about 62,500 regions/cm<sup>2</sup> and about 625 regions/cm<sup>2</sup>. --

-- 22. The substrate of claim 21, wherein the density of discrete regions in the microarray is about 10,000 regions/cm<sup>2</sup> or more. --

-- 23. The substrate of claim 21, wherein the density of discrete regions in the microarray is about 2,500 regions/cm<sup>2</sup> or more. --

-- 24. The substrate of claim 21, wherein the substrate is glass. --

-- 25. The substrate of claim 21, wherein the substrate is non-porous. --

-- 26. The substrate of claim 21, wherein the surface of the substrate is hydrophobic. --

-- 27. The substrate of claim 21, wherein the surface of the substrate comprises one or more chemical moieties selected from the group consisting of silyl, hydroxyl, carboxyl, amine, aldehyde, and sulfhydryl. --

-- 28. The substrate of claim 21, wherein the DNA sequences are bound directly to the surface of the substrate. --

-- 29. The substrate of claim 21, wherein the DNA sequences are covalently bound to the surface of the substrate. --

-- 30. The substrate of claim 21, wherein the DNA sequences are non-covalently bound to the surface of the substrate. --

-- 31. The substrate of claim 21, wherein the DNA sequences are selected from the group of polynucleotides consisting of mRNA-derived sequences, genomic DNA sequences, and fragments thereof. --

-- 32. The substrate of any one of claims 21, 22 or 23, wherein the microarray comprises 2,500 or more regions. --

-- 33. The substrate of any one of claims 21, 22, or 23, wherein the microarray comprises 10,000 or more regions. --

-- 34. A substrate with a surface comprising a microarray of DNA sequences and suitable for analysis of a polynucleotide mixture, wherein (i) the microarray has a density of about 400 or more discrete regions of DNA sequences per  $\text{cm}^2$  of substrate surface; (ii) each of said regions contains, as an isolated polynucleotide, a characteristic DNA sequence; (iii) the microarray comprises at least 400 regions free of cross-contamination by DNA sequences characteristic of others of said 400 regions, such that the DNA sequences in said regions are selective in hybridizing with corresponding members of said mixture. --

-- 35. A substrate according to claim 34, wherein the freedom from cross-contamination in said 400 regions is sufficient to permit detection of a two-fold change in the relative abundance of polynucleotides in mixtures subjected to analysis. --

-- 36. A substrate with a surface comprising a microarray of DNA sequences, wherein (i) the microarray has a density of 400 or more discrete regions of DNA sequences per  $\text{cm}^2$  of